

WHAT IS CLAIMED IS:

1. A method for applying an image enhancement algorithm to input digital images represented in different input color spaces comprising:
 - a) identifying the input color space of an input digital image;
 - b) applying a color space transformation to the input digital image represented in the input color space to form a corresponding input digital image in a reference color space;
 - c) adjusting one or more algorithm parameters of the image enhancement algorithm in response to the identified input color space; and
 - d) applying the image enhancement algorithm with the one or more adjusted algorithm parameters to the corresponding input digital image in the reference color space to produce an enhanced digital image in the reference color space.
2. The method according to claim 1 wherein the reference color space is an extended color gamut color space.
3. The method according to claim 1 wherein the input color space is a limited color gamut color space.
4. The method according to claim 1 wherein the reference color space represents an estimate of the colors in an original scene.
5. The method according to claim 4 wherein the input color space represents the colors of a photographic negative, and the color space transformation is an inverse film sensitometry transformation.
6. The method according to claim 4 wherein the input color space is a video RGB color space, and wherein the color space transformation is substantially an inverse of a color adjustment function used to map original scene colors to corresponding colors appropriate for display on a video display.

7. The method according to claim 6 wherein the inverse color adjustment function produces corresponding input digital images in the reference color space having reduced highlight color saturation for highlight color values compared with corresponding original scene colors.

8. The method according to claim 1 further including the step of applying an output color space transformation to the output digital image in the reference color space to form a corresponding output digital image in an output color space.

9. The method according to claim 8 wherein the output color space is the same as the input color space.

10. The method according to claim 1 wherein the image enhancement algorithm is an adaptive tone scale enhancement algorithm.

11. The method according to claim 1 wherein the image enhancement algorithm is a color enhancement algorithm.

12. The method according to claim 1 wherein the image enhancement algorithm is a noise reduction algorithm.

13. The method according to claim 1 wherein the image enhancement algorithm is a sharpening algorithm.

14. The method according to claim 1 wherein a sequence of image enhancement algorithms are applied to the corresponding input digital image in the reference color space.

15. The method according to claim 1 wherein the one or more algorithm parameters control whether or not a component of the image enhancement algorithm is applied.

16. A method for applying an image enhancement algorithm to input digital images represented in different input color spaces comprising:

- a) identifying the input color space of an input digital image;
- b) applying a color space transformation to the input digital image represented in the input color space to form a corresponding input digital image in a reference color space;
- c) selecting a version of the image enhancement algorithm according to the identified input color space; and
- d) applying the selected version of the image enhancement algorithm to the corresponding input digital image in the reference color space to produce an enhanced digital image in the reference color space.

17. The method according to claim 16 where the reference color space is an extended color gamut color space.

18. The method according to claim 16 where the input color space is a limited color gamut color space.

19. The method according to claim 16 where the reference color space represents an estimate of the colors in an original scene.

20. The method according to claim 19 where the input color space represents the colors of a photographic negative, and the color space transformation is an inverse film sensitometry transformation.

21. The method according to claim 19 where the input color space is a video RGB color space, and wherein the color space transformation is

substantially an inverse of a color adjustment function used to map original scene colors to corresponding colors appropriate for display on a video display.

22. The method according to claim 21 where the inverse color adjustment function produces corresponding input digital images in the reference color space having reduced highlight color saturation for highlight color values compared with corresponding original scene colors.

23. The method according to claim 16 further including the step of applying an output color space transformation to the output digital image in the reference color space to form a corresponding output digital image in an output color space.

24. The method according to claim 16 wherein the selected version of the image enhancement algorithm is an adaptive tone scale enhancement algorithm.

25. The method according to claim 16 wherein the selected version of the image enhancement algorithm is a color enhancement algorithm.

26. The method according to claim 16 wherein the selected version of the image enhancement algorithm is a noise reduction algorithm.

27. The method according to claim 16 wherein the selected version of the image enhancement algorithm is a sharpening algorithm.